



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/881,243	08/30/2001	Kirk P. Smith	USGS-3671	8337

7590 10/06/2003

Carla Mattix  
Division of General Law Office of the Solicitor  
U.S. Department of the Interior  
1849 C Street NW, MS 6531  
Washington, DC 20240

EXAMINER	
NOGUEROLA, ALEXANDER STEPHAN	
ART UNIT	PAPER NUMBER
1753	

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/881,243

Applicant(s)

SMITH ET AL.

Examiner

ALEX NOGUEROLA

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 1753

***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference signs not mentioned in the description: see page 12 of the specification. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference signs in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Objections***

2. Claim 1 is objected to because of the following informality: in line 7 "rising" should be -- rinsing -- .

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention:

- a) Claim 1: between lines 2 and 3 a new line should be inserted, as follows -- providing a system for monitoring water quality, the system comprising measuring probes --;
- b) Claim 1, line 3: "a" should be -- the --;
- c) Claim 1, line 5 should be rewritten as -- self-testing and calibrating the probes --;
- d) Claim 1, line 8: -- of the system -- should be inserted after "operator";
- e) Claim 1, line 12: to what is the buffer added?
- f) Claim 1, lines 13-14 should be rewritten as -- measuring water quality by measuring analytes in the sample with the probes; -- ;
- g) Claim 1, lines 16-18: is this an optional *second* measuring step or an alternative to the measuring step of lines 13-14?
- h) Claim 1, lines 16-17: "for a dilution or a spike" should be -- to dilute the sample or create a spike --;
- i) Claim 1, lines 16-17: to what is the dilution solution added?
- j) Claim 1 recites the limitation "the sampling" in line 23. There is insufficient antecedent basis for this limitation in the claim;
- k) Claim 7, lines 7: are the purified fluids for purging the system of gas or with gas? If the latter then fluids should be -- gasses --.

Art Unit: 1753

- l) Claim 7, line 8: “,” should be deleted after “solutions”;
- m) Claim 7, lines 12-13: these two lines should precede lines to provide antecedent basis for “sample containers” in line 11;
- n) Claim 7, line 11: -- the -- should be inserted before “sample”; and
- o) Claim 7, line 12: are the sample containers actually going to be pumped?

- 4. Note that dependent claims will have the deficiencies of base and intervening claims.

***Claim Rejections - 35 USC § 103***

- 5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- 6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

- 1. Determining the scope and contents of the prior art.
- 2. Ascertaining the differences between the prior art and the claims at issue.
- 3. Resolving the level of ordinary skill in the pertinent art.
- 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Art Unit: 1753

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 2, and 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukunaga et al. (US 6,290,908 B1) in view of Guruswamy (US 4,762,594), Blumenthal et al. (US 5,496,459), Wong et al. (US 5,330,634), and Parris (US 5,653,862).

Addressing claim 1, The Fukunaga et al. reference teaches an automated process for monitoring water quality (implied by col. 8, ll. 35-41; col. 8, ll. 46-56; and col. 9, ll. 49-54, which teach a sequence control method for performing the monitoring steps) comprising

providing a system for monitoring water quality, the system comprising measuring probes (the abstract; Figure 1; and col. 9, ll. 33-59);

self-testing and calibrating the probes (col. 11, ll. 31-44 teaches calibrating the probe and correcting measured values);

recording calibration data (col. 11, ll. 31-44 and col. 8, ln. 65 – col. 9, ln. 9);

rinsing the system (col. 11, ln. 45 – col. 12, ln. 20);

introducing sample to be tested into the system (col. 6, ll. 14-19);

measuring water quality by measuring analytes in the sample with the probes (col. 5,

Art Unit: 1753

ll. 28-48);

recording the measurements (col. 5, ll. 48-51); and

producing or transmitting a computer file to record the results of the measuring (col. 5,

ll. 51-57).

The Fukunaga et al. reference does not mention purging the system with gas.

The Guruswamy reference teaches purging with gas a system comprising probes for monitoring a liquid sample (the abstract and col. 13, ll. 53-65). It would have been obvious to one with ordinary skill in the art at the time the invention was made to purge with gas a system comprising probes as taught by the Guruswamy reference in the invention of the Fukunaga et al. reference because as taught by the Guruswamy reference this will remove gases that will reduce the accuracy of the measures. For example, if oxygen or carbon dioxide in the water sample is to be measured, then any oxygen or carbon dioxide in system from the atmosphere will introduce inaccuracies into the measurements of these gases.

The Fukunaga et al. reference does not mention optionally notifying an operator, optionally adding appropriate solution for a dilution or a spike, and optionally recalibrating the system after a number of samples are measured. It should be first noted that these limitations are optional and so not actually required by the claim.

As for optionally notifying an operator if the operational parameters of the probe do not meet prespecified criteria, as shown by the Blumenthal et al. reference, providing feedback to an operator of the failure of a probe in a system comprising probes was known at the time of the invention (abstract and col. 13, ll. 62-65). It would have been obvious to one with ordinary skill in the art at the time the invention was made to notify an operator if the operational parameters of

Art Unit: 1753

the probe do not meet prespecified criteria as taught by the Blumenthal et al. reference in the invention of the Fukunaga et al. reference as modified by the Guruswamy reference because then the operator will know whether to proceed with the measurements and if so whether the results of measures from any probes should be disregarded (col. 9, ll. 55-63 in the Fukunaga et al. reference).

As for optionally adding buffer or ionic-strength adjusting solution, as shown by the Wong et al. reference, adding pH buffer to a system comprising probes was known at the time of the invention (abstract and col. 6, ll. 45-54). It would have been obvious to one with ordinary skill in the art at the time the invention was made to add pH buffer as taught by the Wong et al. reference in the invention of the Fukunaga et al. reference as modified by the Guruswamy and Blumenthal et al. references because this will optimize the reactions of the reagents with the analytes

As for optionally adding appropriate solution of a dilution solution, as shown by the Parris reference, diluting a sample was known at the time of the invention (abstract and col. 2, ll. 45-54). It would have been obvious to one with ordinary skill in the art at the time the invention was made to dilute the sample as taught by the Parris reference in the invention of the Fukunaga et al. reference as modified by the Guruswamy, Blumenthal et al., and Wong et al. references because this will increase sensor life and reduce the amount of byproducts.

As for optionally recalibrating the system after a number of samples are measured to defect drift of probe calibration parameters, clearly it was within ordinary skill in the art at the time of the invention to recalibrate the probes as error in the measurements becomes apparent.



Art Unit: 1753

Addressing claim 2, notifying an operator of the results obtained for the water conditions monitored is taught in col. 4, ln. 61 – col. 5, ln. 5.

Addressing claims 4 and 5, notifying the operator of malfunctioning probes is implied by col. 9, ll. 55-63 of the Fukunaga et al. reference, which teaches recognizing whether some probes are malfunctioning and continuing measurements with the normally functions probes.

Addressing claim 6, notifying the operator of malfunctioning probes is implied by col. 9, ll. 55-63 of the Fukunaga et al. reference, which teaches recognizing whether some probes are malfunctioning and continuing measurements with the normally functions probes. Although the reference does not teach terminating monitoring process it would have been obvious to one with ordinary skill in the art at the time the invention was made to terminate the process if the operator has been notified that all of the probes are malfunctions because to continue monitoring will only produce inaccurate measurements and may even damage the monitoring system.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukunaga et al. (US 6,290,908 B1) in view of Guruswamy (US 4,762,594), Blumenthal et al. (US 5,496,459), Wong et al. (US 5,330,634), and Parris (US 5,653,862) as applied to claims 1, 2, and 4-6 above, and further in view of JPO abstract of Takagi et al. (JP 2001033297 A) and JPO abstract of Komatsu et al. (JP 10337556 A).

Art Unit: 1753

The Fukunaga et al. reference as modified by the Guruswamy, Blumenthal et al., Wong et al., and Parris references does not specifically mention notifying the operator using a voice modem or electronic mail, although it should be noted that the Fukunaga et al. reference teaches notifying an operator using radio means or a public transmission line, which presumably includes telephone or internet. In any event, notifying the operator using a voice modem of results of water monitoring was known at the time of the invention as shown by the JPO abstract of Takagi et al. and the JPO abstract of Komatsu et al. It would have been obvious to one with ordinary skill in the art at the time the invention was made to notify the operator using a voice modem of results of water monitoring as taught by the JPO abstract of Takagi et al. and the JPO abstract of Komatsu et al. in the invention of the Fukunaga et al. reference as modified by the Guruswamy, Blumenthal et al., Wong et al., and Parris references because this will allow the water quality monitoring system to be remotely located without requiring the operator to be nearby.

*Allowable Subject Matter*

10. Claim 7 would be allowable if rewritten or amended to overcome the rejections under 35 U.S.C. 112, second paragraph, set forth in this Office action.

11. The following is a statement of reasons for the indication of allowable subject matter:

a) Claim 7 requires the plurality of ion-selective electrodes and probes to be configured in a single flow train and a recirculation pump for optionally recirculating samples and reagents. In the Fukunaga et al. reference the probes are not combined in a single flow train, but are in

Art Unit: 1753

parallel flow trains (Figures 1 and 4). Additionally, there is no recirculation pump in the Fukunaga et al. reference because samples and reagents are discharged after passing through the analyzing cells (Figure 1 and col. 7, ll. 8-12). The Parris, Wong et al., and Guruswamy references teach ion-selective electrodes and/or probes combined in a single flow train; however these references do not disclose a recirculation pump as claimed. The Parris, Wong et al., and Guruswamy references also do not disclose reservoirs for solutions within the monitoring system housing assembly. The Yager reference teaches recirculation pumps in water quality monitoring system housing assembly; however, the probes are not combined in a single flow train and no reservoirs for solutions used in water quality monitoring have been provided. In the Yager reference portions of sample in a sample reservoir are sent separately to the different probes for concurrent measurements; and

b) Claims 8-12 depend from allowable claim 7.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (703) 305-5686. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NAM NGUYEN can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Art Unit: 1753

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*Alex Noguera*

Alex Noguera

10/01/2003

Primary Examiner

TC 1700